

# LAB ANALYSIS INTERPRETATIONS

## **Ag Index (Nutrients/Na+Cl)**

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Repeated use of a compost with a low AgIndex (below 2) results in sodium and/or chloride becoming the limiting factor governing application rates (ie. sodium and/or chloride become toxic before nutrients become optimum). May be used on well drained soils with salt tolerant plants. Additional nutrients from another source may be needed. An AgIndex above 10 result in a build-up of nutrients to optimum for plant growth without a concern of a toxic build-up of sodium and/or chloride from the compost. Good for increasing nutrients on all soils. Most compost fall in the range between 2 and 10 and concentrations of both nutrients and sodium plus chloride in the receiving soil should be considered when determining application rates. AgIndex is a product of feedstock quality. Feedstock from dairy manure, ocean fish waste, un-washed kelp, industrial wastes, cheese & pickle waste, salt tolerant plants, can produce a finished compost with a low AgIndex.

## **AmmoniaN/NitrateN ratio**

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Typically ammonia is in excess with the break-down of organic materials resulting in a increase in pH. This combination result in a loss of volatile ammonia (it smells). Once the toxic ammonia has gone off and the pH drops the microbes convert ammonia to nitrates. A low ammonia + high nitrate indicates Mature. Exceptions are many. A compost with a low pH value (< 7) will retain ammonia and a compost with high lime content can lose ammonia before the organic fraction become stable.

## **Ash to Organic Matter ratio**

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High Ash content indicates possible 1) excess mineralization (old compost) 2) contamination with dirt base material during turning 3) poor quality feedstock or 4) soil or mineral products added. Finding the source and reducing Ash is often the fastest means of increasing nutrient quality of a compost.

## **C/N Ratio**

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A C/N ratio below 13 indicates Mature and above 15 indicates Immature. But there are many exceptions. Example; large (> 6.3mm) woodchips are slow to breakdown and can result in a Stable product based on Biological Available Carbon (BAC) yet the C/N ratio value is high. Some organic feedstock like bark and redwood are resistant to degradation result in a Stable compost with a high C/N ratio. And some mixes with chicken manure and green grasses can start below 15 and are very un-Stable.

## **Lime Content (lbs. per ton)**

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Compost produced from chicken manure (layers), ash materials, and lime products can result in a finished compost high in carbonates. An excellent product when used on a receiving soil where an addition of lime is recommended from a soil analysis, but caution should be used when applying to a soil wanting a lower pH.

## **Minimum Manufacturing / Production Requirement:**

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**Level 1** – This facility is permitted under Colorado Department of Public Health and Environment, Regulation #64 as a Class I facility. If it is exempt from CDPH&E permitting requirements, or if it is a Class II or Class III facility as a result of the feedstock materials it uses or the volumes it produces, it will certify that it follows all guidelines and procedures for production of compost meeting *EPA 40 CFR 503.13 requirements for production and marketing of Class A material for unrestricted use and distribution.*

**Level 2** - This facility is exempt from permitting under Colorado Department of Public Health and Environment Regulation #64.

### **Nutrients (N+P205+K20)**

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This is the sum of the primary nutrients Nitrogen, Phosphorus and Potassium. Reported units are consistent with units on fertilizer formulations. A sum greater than five indicates a compost with a high nutrient content and best used when intended to supply nutrients to a receiving soil. A value below two indicates a low nutrient content and best used where soil structure needs improving and nutrients can be added from another source. Most compost fall within the range between two and five.

### **Organic Fraction (grams OM per 100 gAsh)**

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Compost operations on a solid base and where there are no more additions of materials once the operation Starts can use Ash as a constant value to aid in graphing loss of organic matter, nitrogen conversion, moisture and leaching if tested weekly during composting. A good aid in solving problems with poorly formulated feedstock.

### **Particle Size**

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Large particles may restrict use for greenhouses, golf courses, seedlings etc. where a fine size distribution is required. Can still be used for field soils, shrub mixes and mulches.

### **Particle Size Distribution**

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Each size fraction is measured on both a weight and volume basis. Bulk density is calculated from these two values. Aids in decisions to screen or not and size screen to use. Calculates the weight, volume and make-up of the fraction to be removed. Removing large mineral material greatly improves compost quality. Aids in locating source of un-wanted stone materials and making decisions if removed material should be added into a new pile (woody) or landfilled (stony).

### **Respiration Rate - Biological Available Carbon**

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The Respiration Rate (RR) and Biological Available Carbon (BAC) measure the rate CO<sub>2</sub> is released under the same moisture and temperature conditions. Additionally for the BAC test porosity, nutrients, pH and microbes are adjusted for optimum. If both RR and BAC results are about the same indicates the compost conditions are optimum. If the BAC results are higher than RR indicates a compost pile activity limited by one or more of the conditions corrected in the BAC test. A Stable RR and BAC test indicates a Stable product. A Stable RR but un-Stable BAC test indicates an un-Stable product that, if used, should be on well drained field soils at a low application rate applied several weeks before planting.

### **Risk Factor**

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The risk factor indicates the general risk to plant germination and sustainability the product poses when used as a large percentage of the growing medium, especially if poor incorporation or drainage is present.

Salts refers to all soluble ions including nutrients and sodium and chloride. High salts + high AgIndex indicates a compost high in readily available nutrients. Application rate should be limited to obtaining optimum nutrients. High Salts and low AgIndex indicates a compost low in nutrients and high concentrations of sodium and/or chloride limiting application rate to toxicity of sodium and/or chloride. Low salts indicates more compost can be applied before salt toxicity and nutrients are not readily available but in a slo-release form.

## **Tested for Clopyralid**

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This indicates that the product must be tested for the presence of Clopyralid (using either chemical or lab certified germination testing) at such a level as to cause plant performance failure.

## **Testing and Test Report Submittal Requirement**

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This refers to the type of test and the type of report that is to be used as part of the submittal documents. STA indicates that the Test Methods to be used for purposes of this specification are as provided in The Test Methods for the Examination of Compost and Composting (TMECC, jointly published by the USDA and USCC (2002 publishing as a part of the USDA National Resource Conservation Technical Bulletin Series). A list of such methods is provided in the table below and online at <http://tmecc.org/tmecc/>